



PEEK™ (Polyether Ether Ketone)

PEEK™ is a high-performance engineering polymer with amazing strength and heat resistance characteristics. In applications such as aerospace, where weight is of paramount importance, PEEK™ has become a popular substitute for metal. Due to its purity, high burst pressure and chemical resistance, it has also become the standard for applications in analytical science. In medical applications, biocompatibility, high tensile strength and lubricity make PEEK™ an ideal replacement for stainless steel. PEEK™ is a very stiff plastic with excellent slipperiness. Its natural color is beige.

PEEK™ Tubing

Key features

- Ideal replacement for stainless steel in terms of weight and chemical compatibility
- Exceptional torsional stability
- Heat mouldable
- Gamma ray resistant
- High burst pressure
- Can be sterilised multiple times in an autoclave
- High strength
- High heat resistance
- Excellent resistance to chemicals and solutions
- Excellent impact and wear resistance
- Low flammability
- Excellent creep and fatigue resistance
- Excellent hydrolysis resistance
- Tight extrusion tolerances

Material modification: radiation-impermeable fillers, glass, carbon, pigments and much more

PEEK Grades

Standard Grade

This grade is for General Information applications with the highest elongation at break and the lowest values for tensile strength, flexural strength and flexural modulus. Pure PEEK™ has the best notch toughness values.

Grade filled with 30% glass fibers

Filling with glass fibers results in better mechanical values in terms of tensile strength, flexural strength and flexural modulus, but reduces the values for elongation at break and notch toughness, especially at low temperatures. PEEK™ filled with glass fibers has a lower coefficient of expansion and is therefore suitable for high-temperature applications.

Grade filled with 30% carbon fibers

Filling with carbon fibers results in better mechanical values in terms of tensile strength, flexural strength and flexural modulus, but reduces the values for elongation at break and notch toughness, especially at low temperatures. PEEK™ filled with carbon fibers has a very low coefficient of expansion and very good thermal conductivity.

Lubrication grades

The addition of 30% carbon/PTFE improves the properties of PEEK™ with regard to friction and abrasion. This addition also increases machinability and makes this grade very suitable for the production of finished bearings.

Technical data

Properties	Standard values		
Grade	Standard	30% glass fibers	30% carbon fibers
Tensile strength (at 23°C)	100 MPa	150 MPa	215 MPa
Modulus of elasticity (with 1% elongation at 23°C)	3.5 GPa	11.4 GPa	22.3 GPa
Elongation at break (at 23°C)	34%	2%	1.8%
Flexural strength (at 23°C)	163 MPa	212 MPa	298 MPa
Notched impact strength (at 23°C)	7.5 kJ/m ²	10.3 kJ/m ²	5.4 kJ/m ²
Specific heat of fusion	2.16 kJ/kg°C	1.7 kJ/kg°C	1.8 kJ/kg°C
Glass transition temperature	143 °C	143 °C	143 °C
Deformation temperature	152 °C	315 °C	315 °C
Expansion coefficient	< T _g 4.7 x 10 ⁻⁵ /°C > T _g 10.8 x 10 ⁻⁵ /°C	< T _g 1.5 x 10 ⁻⁵ /°C	< T _g 1.5 x 10 ⁻⁵ /°C
Continuous operating temperature electrical	260 °C	240 °C	---
Continuous operating temperature without mechanical stress	240 °C	240 °C	240 °C
Continuous operating temperature with mechanical stress	180 °C	220 °C	200 °C
Density	1,0	1,51	1,40
Water absorption	0.50% (50% rh)	0.11% (50% rh)	0.06% (50% rh)
Light transmission	none	none	none
Color	gray-brown	brown	black

Dimensions

Item number	Inch dimensions		Metric dimensions [mm]		
	Inside Ø	Outer Ø	Inside Ø	Outer-Ø	Permissible pressure*
ISPEEK003/020	0,003	0,020	0,076	0,508	2000 psi
ISPEEK005/020	0,005	0,020	0,127	0,508	2000 psi
ISPEEK010/020	0,010	0,020	0,254	0,508	2000 psi
ISPEEK003/062	0,003	0,062	0,076	1,575	5000 psi
ISPEEK005/062	0,005	0,062	0,127	1,575	5000 psi
ISPEEK007/062	0,007	0,062	0,178	1,575	5000 psi
ISPEEK010/062	0,010	0,062	0,254	1,575	5000 psi
ISPEEK020/062	0,020	0,062	0,508	1,575	5000 psi
ISPEEK030/062	0,030	0,062	0,762	1,575	5000 psi
ISPEEK040/062	0,040	0,062	1,016	1,575	5000 psi
ISPEEK055/062	0,055	0,062	1,397	1,575	5000 psi
ISPEEK062/125	0,062	0,125	1,575	3,175	5000 psi
ISPEEK080/125	0,080	0,125	2,032	3,175	3000 psi

* Recommended maximum operating pressure

Now available in very thin wall configurations with wall thicknesses down to 0.051 mm for many sizes. +/- 0.25 mm (0.001") tolerances available for most sizes.